



# Stormwater Program Watershed Management Plan and Community Update

November 29, 2012

# Stormwater Drivers

- MS4 Permit
- Bay TMDL
- Other TMDLs
- Maintenance of existing facilities
- Public Safety /Emergency Response
- Dam Regulations

# MAJOR COMPONENTS OF FAIRFAX COUNTY'S STORMWATER PROGRAM

- Conveyance Systems
- Dam Safety and Facility Rehabilitation
- Emergency and Flood Response
- Operations
- Stormwater Regulatory Program
- Streams and Water Quality

# CONVEYANCE SYSTEMS

- Inspect and maintain approximately 1,500 miles of storm sewer
- Investigate storm drainage and flooding complaints
- Maintain inventory of county facilities

Pipe Before Lining



Pipe After Lining

# DAM SAFETY AND FACILITY REHABILITATION

- Dam certification and regulatory compliance
- Dam inspection and maintenance
- Dredging



# EMERGENCY AND FLOOD RESPONSE

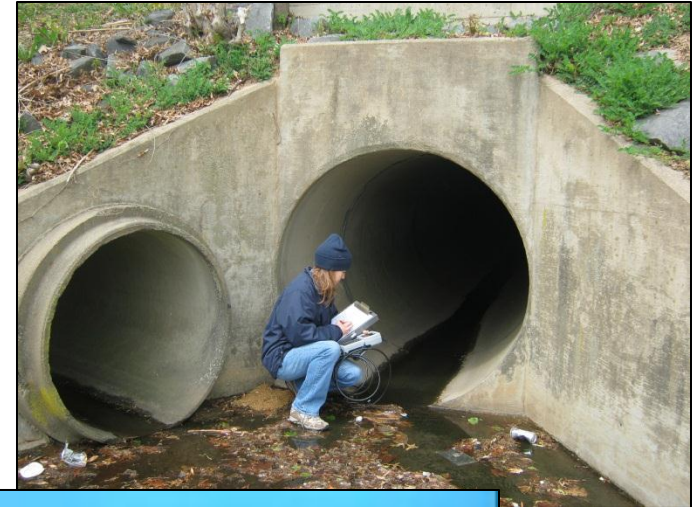
- National Flood Insurance Program
- Community Rating System (CRS)
- Storm monitoring
- Flood response
- Snow removal





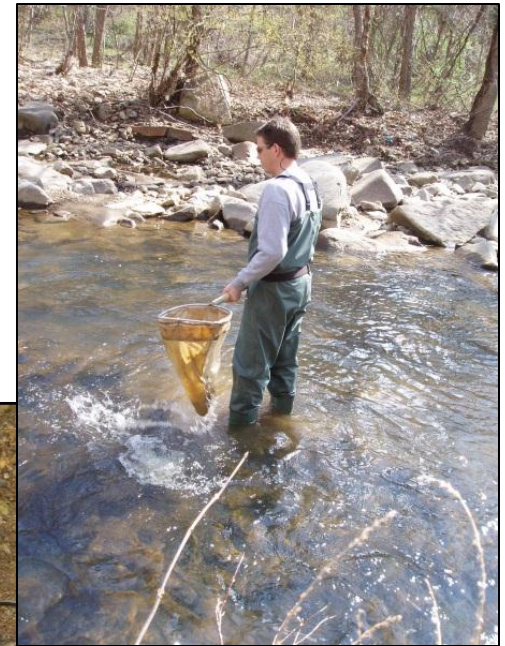
# STORMWATER REGULATORY PROGRAM

- TMDL compliance
- MS4 permit
  - 18 permit elements including:
    - Monitoring and assessment
    - Illicit discharge response
    - Outreach and Education
    - Watershed Planning



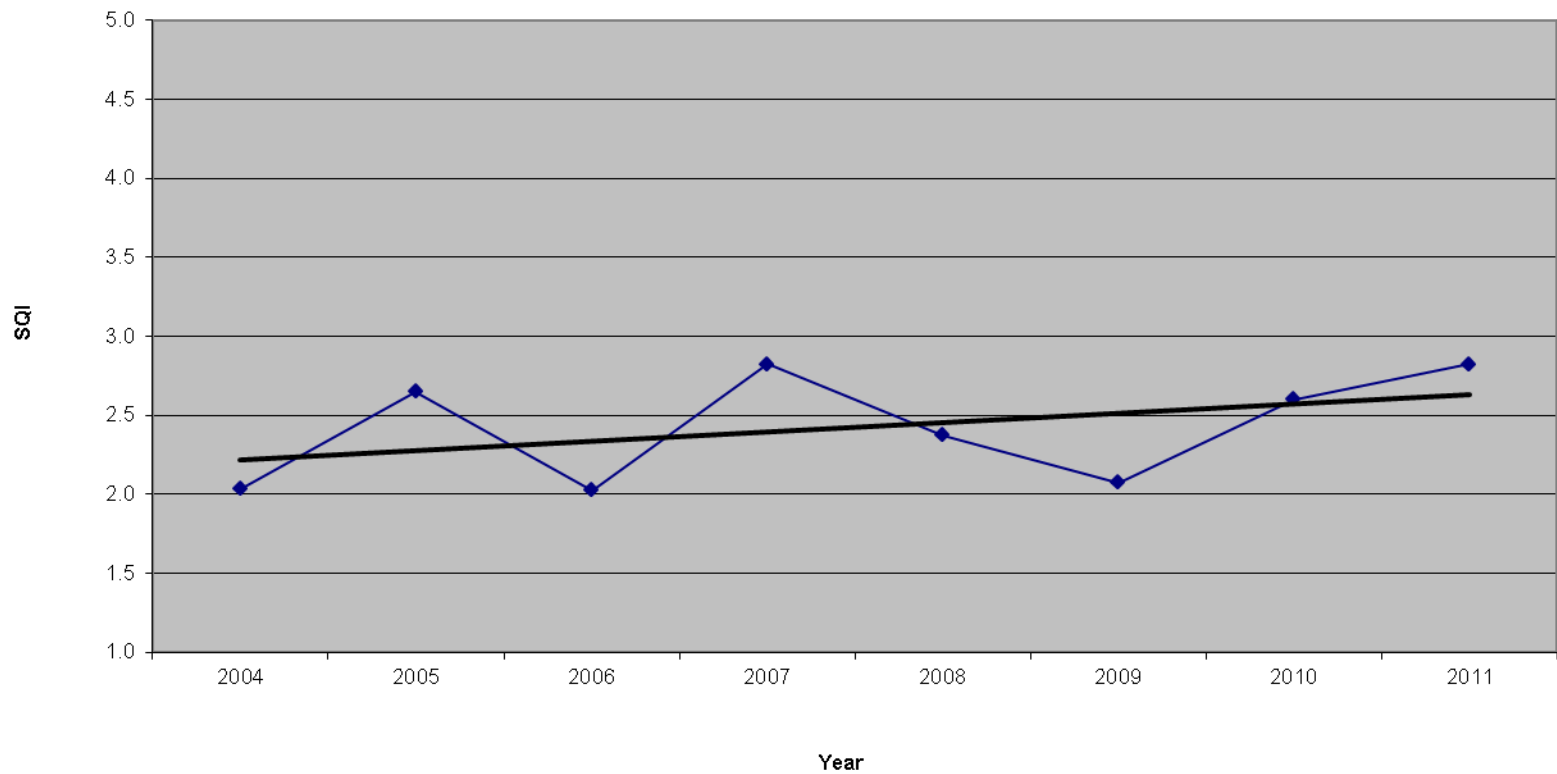
# MONITORING

- Annual stream bio-assessments (since 1999)
  - Evaluate trends in stream countywide
    - Benthic macro-invertebrates
    - Fish community
    - Bacteria (*E. coli*)



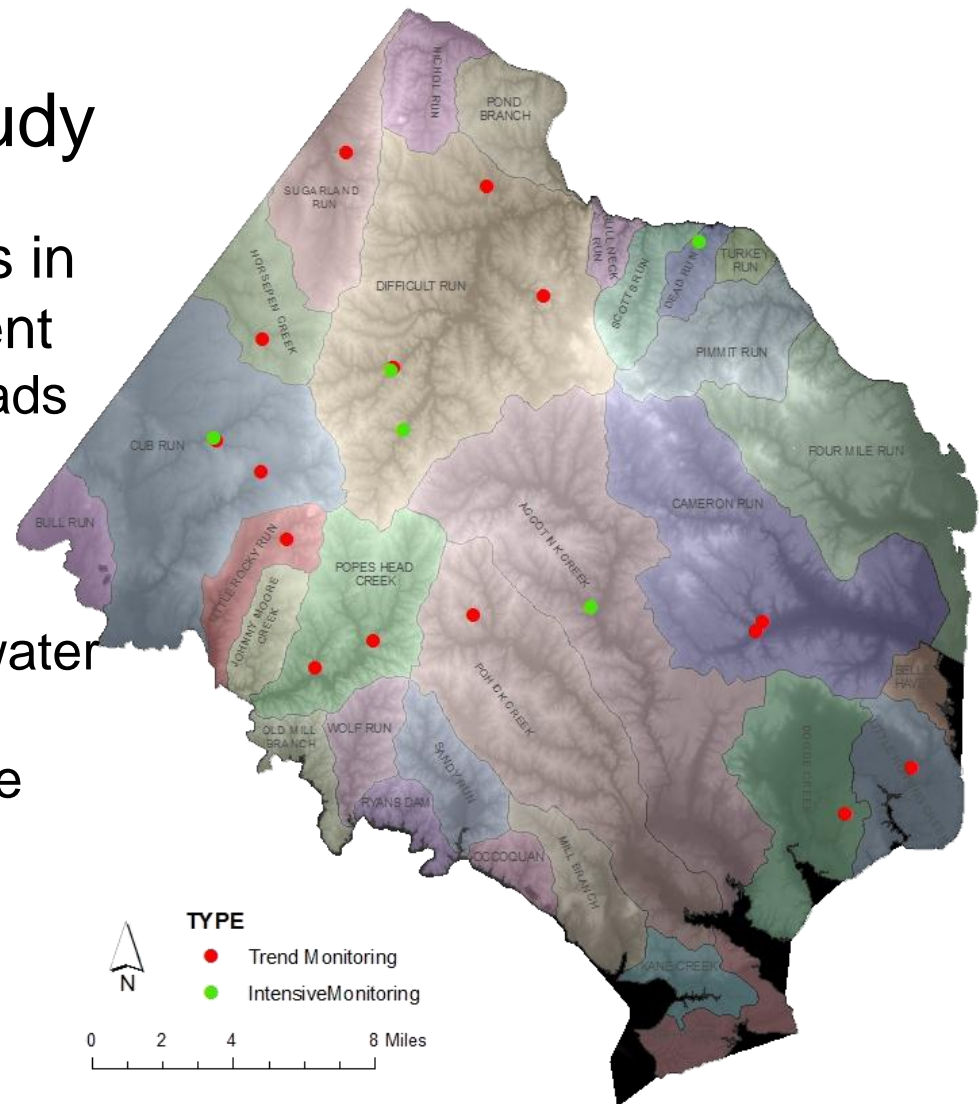


# Stream Quality Index



# USGS Study

- USGS stream gaging study (since 2007)
  - Evaluate long-term trends in flow, nutrients and sediment
  - Calculate actual annual loads and yields of N, P & TSS
  - Determine effectiveness/impacts of improvement projects on water quality/quantity at the watershed scale - over time

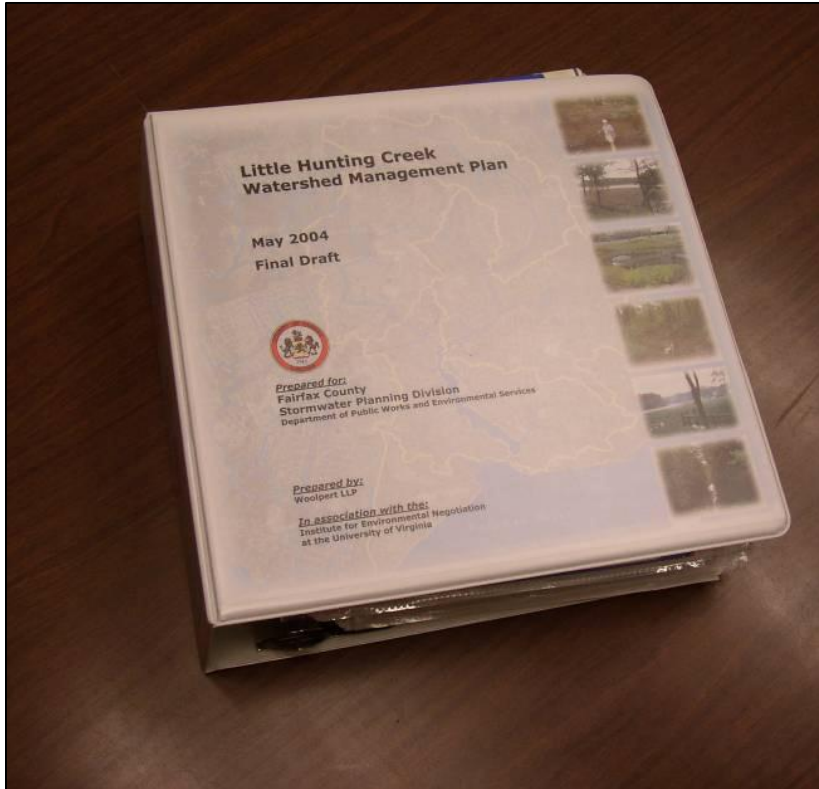


# NON-STRUCTURAL PROJECTS

- Rain Barrel Program
- Buffer Restoration
- Dumpsite/Obstruction Removal
- Community Outreach & Public Education
- Stream clean-ups



# WATERSHED MANAGEMENT PLANS



- 13 watershed management plans (30 watersheds)
- Plans used to help identify projects for project implementation.
- All plans are available online at [www.fairfaxcounty.gov/watersheds](http://www.fairfaxcounty.gov/watersheds)



# STREAMS AND WATER QUALITY STRUCTURAL PROJECTS

- Stormwater Pond Retrofits
- LID Implementation
- Outfall Improvement
- Stream restoration
- Area-Wide Drainage Improvement





# FY2013 PROJECTS

WATERSHED	PROJECTS
ACCOTINK CREEK	11
CAMERON RUN	3
CUB RUN	4
DEAD RUN	3
DIFFICULT RUN	6
DOGUE CREEK	5
HORSEPEN CREEK	4
LITTLE ROCKY RUN	2
MILL BRANCH	2
PIMMIT RUN	4
POHICK CREEK	13
POND BRANCH	4
POPES HEAD CREEK	3
SANDY RUN	1
SCOTTS RUN	0
SUGARLAND RUN	3
TURKEY RUN	1
MULTIPLE	4
	73

## GROUP 1 - FY12 Capital Projects

## GROUP 2 - WMP Projects

## GROUP 3 - Partnership Projects

## GROUP 4 - Special Projects

## GROUP 5 - Pro Rata Projects

## GROUP 6 - Dam Safety Projects

Watershed	Project ID	Project Name	Project TYPE	DISTRICT	Group
ACCOTINK CREEK	AC9140	Brookfield Park Dam Repair	Stormwater Pond Retrofit	LEE	GROUP 1
CAMERON RUN	FX0100-CA013	Indian Run	Stream Restoration	MASON	GROUP 1
PIMMIT RUN	FX0100-PM002	Franklin Park and Chesterbrook (Patton Terrace) PM9978	Areawide Stormwater Project	DRANESVILLE	GROUP 1
PIMMIT RUN		George C. Marshall	BMP/LID	PROVIDENCE	GROUP 1
POHICK CREEK	PCPC008	Pohick Creek (Noman Cole PCPC-008)	Stream Restoration	MOUNT VERNON	GROUP 1
POND BRANCH	PN9408	Beach Mill	Stream Restoration	DRANESVILLE	GROUP 1
MULTIPLE		Facility Access Road Project		MULTIPLE	GROUP 1
ACCOTINK CREEK	AC9212	Turkey Run (Truro)	Stream Restoration 2500lf	BRADDOCK	GROUP 2
ACCOTINK CREEK	AC9238	Long Branch (9238)	Stream Restoration 2500lf	PROVIDENCE	GROUP 2
ACCOTINK CREEK	AC9546	Mantua Elementary School BMP/LID	Stormwater enhancements	PROVIDENCE	GROUP 2
ACCOTINK CREEK	AC9555	Nottaway Park	Stormwater enhancements	PROVIDENCE	GROUP 2
CUB RUN	CU9186	Armfield	Stormwater Pond Retrofit	SULLY	GROUP 2
CUB RUN	CU9214	Flatlick D/S from Route 50 (Phase II)	Stream Restoration	SULLY	GROUP 2
CUB RUN	CU9821	Lees Corner Elementary School	Stormwater enhancements	SULLY	GROUP 2
DEAD RUN	DE9123	Broyhill McLean Estates Neighborhood BMP/LID Retrofit	BMP/LID	DRANESVILLE	GROUP 2
DEAD RUN	DE9244	Dead Run Stream Restoration (DE9244/DE9226)	Stream Restoration	DRANESVILLE	GROUP 2
DIFFICULT RUN	DF9045	Regional Pond D45 Alternative	Outfall Improvement	SULLY	GROUP 2
DOGUE CREEK	DC9505	Mount Vernon High School BMP/LID	Stormwater enhancements	MOUNT VERNON	GROUP 2
DOGUE CREEK	DC9513	Groveton Elementary School BMP/LID	Stormwater enhancements	LEE	GROUP 2
HORSEPEN CREEK	HC9118	Spring Lake/Floris Downs Dry Basins Improvement	Stormwater Pond Retrofit	HUNTER MILL	GROUP 2
HORSEPEN CREEK	HC9129	Bradley Acres Dry Basin and Swale Improvements	Stormwater Pond Retrofit	HUNTER MILL	GROUP 2
HORSEPEN CREEK	HC9142	Fox Mill Estates Dry Basin Improvement and Wetland	New Stormwater Pond	HUNTER MILL	GROUP 2
LITTLE ROCKY RUN	LR9510	Centreville Elementary School BMP/LID Suite	Stormwater enhancements	SULLY	GROUP 2
LITTLE ROCKY RUN	LR9516	Centreville High School BMP/LID Suite	Stormwater enhancements	SPRINGFIELD	GROUP 2
MILL BRANCH	MB9510	Silverbrook Elementary School Bioretention	Stormwater enhancements	SPRINGFIELD	GROUP 2
POHICK CREEK	PC9114	Sangster Elementary School SW Pond Retrofit	Stormwater enhancements	SPRINGFIELD	GROUP 2
POHICK CREEK	PC9126	White Oaks Elementary School SW Pond Retrofit	Stormwater enhancements	SPRINGFIELD	GROUP 2
POHICK CREEK	PC9131	Colony Park Dr.	Stormwater Pond Retrofit	BRADDOCK	GROUP 2
POHICK CREEK	PC9257	Stream Restoration Behind Harford Lane	Stream Restoration	BRADDOCK	GROUP 2
POHICK CREEK	PC9263	Stream Restoration Behind Dequincey Drive	Stream Restoration	BRADDOCK	GROUP 2
POND BRANCH	PN9104	Golden Woods Dry Basin Improvement and BMP/LID	Stormwater Pond Retrofit	DRANESVILLE	GROUP 2
POND BRANCH	PN9117	River Bend Road Dry Basin & Dry Basin Improvement	New Stormwater Pond	DRANESVILLE	GROUP 2
ACCOTINK CREEK	AC9106	Cinder Bed Rd. Alignment	Stream Restoration	MOUNT VERNON	GROUP 3
ACCOTINK CREEK	AC9233	Wakefield Park - outfall & stream	Stream Restoration	BRADDOCK	GROUP 3
ACCOTINK CREEK	FCPS CIP	Ravensworth E.S.	Stormwater enhancements	BRADDOCK	GROUP 3
ACCOTINK CREEK		Mid County Health Services	BMP/LID	PROVIDENCE	GROUP 3
ACCOTINK CREEK		Wakefield Park - Parking Lot upgrade	Stormwater enhancements	BRADDOCK	GROUP 3
CAMERON RUN	CA9877	Woodrow Wilson Library	Stormwater enhancements	MASON	GROUP 3
CUB RUN	CU9807	Stringfellow Park and Ride Expansion	BMP/LID	SULLY	GROUP 3
DEAD RUN		McLean Police Station	BMP/LID	DRANESVILLE	GROUP 3
DIFFICULT RUN	FCPS CIP	Forestville E.S.	Stormwater enhancements	DRANESVILLE	GROUP 3
DIFFICULT RUN		Oakton Library	Innovative Stormwater Management	PROVIDENCE	GROUP 3
DIFFICULT RUN		Public Safety Admin. Hdq.	Stormwater enhancements	SPRINGFIELD	GROUP 3
DIFFICULT RUN		Oakmar Rec Center	Stormwater enhancements	PROVIDENCE	GROUP 3
DIFFICULT RUN		Dranesville - Nike Park	Stormwater enhancements	DRANESVILLE	GROUP 3
DOGUE CREEK	FCPS CIP	Woodlawn E.S.	Stormwater enhancements	MOUNT VERNON	GROUP 3
DOGUE CREEK		Route 1 Widening (also in POHICK CREEK)	Innovative Stormwater	MOUNT VERNON	GROUP 3
HORSEPEN CREEK	HC9119	Stratton Woods Park	Stormwater enhancements	HUNTER MILL	GROUP 3
MILL BRANCH		Laurel Hill Equestrian Park	Stormwater enhancements	MOUNT VERNON	GROUP 3
PIMMIT RUN	FCPS CIP	Haycock E.S.	Stormwater enhancements	DRANESVILLE	GROUP 3
PIMMIT RUN		Waste Water Project (SWPD assisted -- WCD funded and constructed in FY12 - second phase may carry over into FY13 with STW funding)	Stormwater enhancements	DRANESVILLE	GROUP 3
POHICK CREEK	Multiple	South Run Park (PC9510BMP/LID 25yr) (PC9210Stream 10yr.)	Stormwater enhancements	SPRINGFIELD	GROUP 3
POHICK CREEK		Kings Park West Pool Naturalization	Reforestation	BRADDOCK	GROUP 3
POHICK CREEK		Burke Lk. Park	Stormwater enhancements	SPRINGFIELD	GROUP 3
POPES HEAD CREEK	FCPA CIP	Patriot Park	Stormwater enhancements	SPRINGFIELD	GROUP 3
SUGARLAND RUN	SU9142	Hemdon Fire Station	BMP/LID	DRANESVILLE	GROUP 3
SUGARLAND RUN		Reston Police Station	BMP/LID	HUNTER MILL	GROUP 3
SUGARLAND RUN		Stuart Rd. Park	Stormwater enhancements	HUNTER MILL	GROUP 3
TURKEY RUN	FCPS CIP	Langley High School	Stormwater enhancements	DRANESVILLE	GROUP 3
MULTIPLE		FMD maintenance projects anticipated for FY-13 based upon a similar number of projects in FY-12. Includes multiple-ADA upgrade projects.	Various BMP/LID	MULTIPLE	GROUP 3
MULTIPLE		Bailey's Crossroads		MASON	GROUP 3
MULTIPLE		FCPA Outfalls	Outfall Improvement		
POND BRANCH	NA	South Lakes HS	Stream Restoration	DRANESVILLE	GROUP 4
ACCOTINK CREEK	Multiple	Wakefield park streams	Stream Restoration		GROUP 4
CAMERON RUN		Overly Drive Flood Mitigation	Flood Mitigation	LEE	GROUP 5
DOGUE CREEK		Banks Property	Stream restoration	LEE	GROUP 5
POPES HEAD CREEK	PH9189	Brentwood West PH9189-0150DP	Detention Basin Retrofit	SPRINGFIELD	GROUP 5
POPES HEAD CREEK	PH9190	Marymead Section 1 and 2 PH9190-0268DP	Detention Basin Retrofit	SPRINGFIELD	GROUP 5
SANDY RUN	SA9211	Streamwood Place Stream Restoration	Stream Restoration	SPRINGFIELD	GROUP 5
POHICK CREEK		Royal Lake Restoration and Dredging (100,000 CY)	Lake Restoration and Dredging	BRADDOCK	GROUP 6
POHICK CREEK		Woodglen Lake Restoration and Dredging	Lake Restoration and Dredging	BRADDOCK	GROUP 6
POHICK CREEK		Huntsman Lake Restoration and Dredging (65,000 CY)	Lake Restoration and Dredging	SPRINGFIELD	GROUP 6
POHICK CREEK		Huntsman Spillway Rehab	Lake Restoration and Dredging	SPRINGFIELD	GROUP 6

# Completed Water Quality Projects

FY10-FY12

- Accotink Creek -3
- Bull Neck Run – 1
- Bull Run - 1
- Cameron Run – 4
- Cub Run – 5
- Dead Run – 2
- Difficult Run - 1
- Dogue Creek – 1
- Horsepen Creek – 2
- Little Hunting Creek – 2
- Pohick Creek - 4
- Popes Head Creek - 1
- Scotts Run -1
- Sugarland Run – 2
- Turkey Run - 1

Acres Treated: 813

Linear Feet Treated: 8,799

Phosphorous Removed: 544 lb/yr

Nitrogen Removed: 3,406 lb/yr

Sediment Removed: 306 tons/yr

# POLICY AND ACTION RECOMMENDATIONS



How do we go from 300 recommendations to an implementable plan?

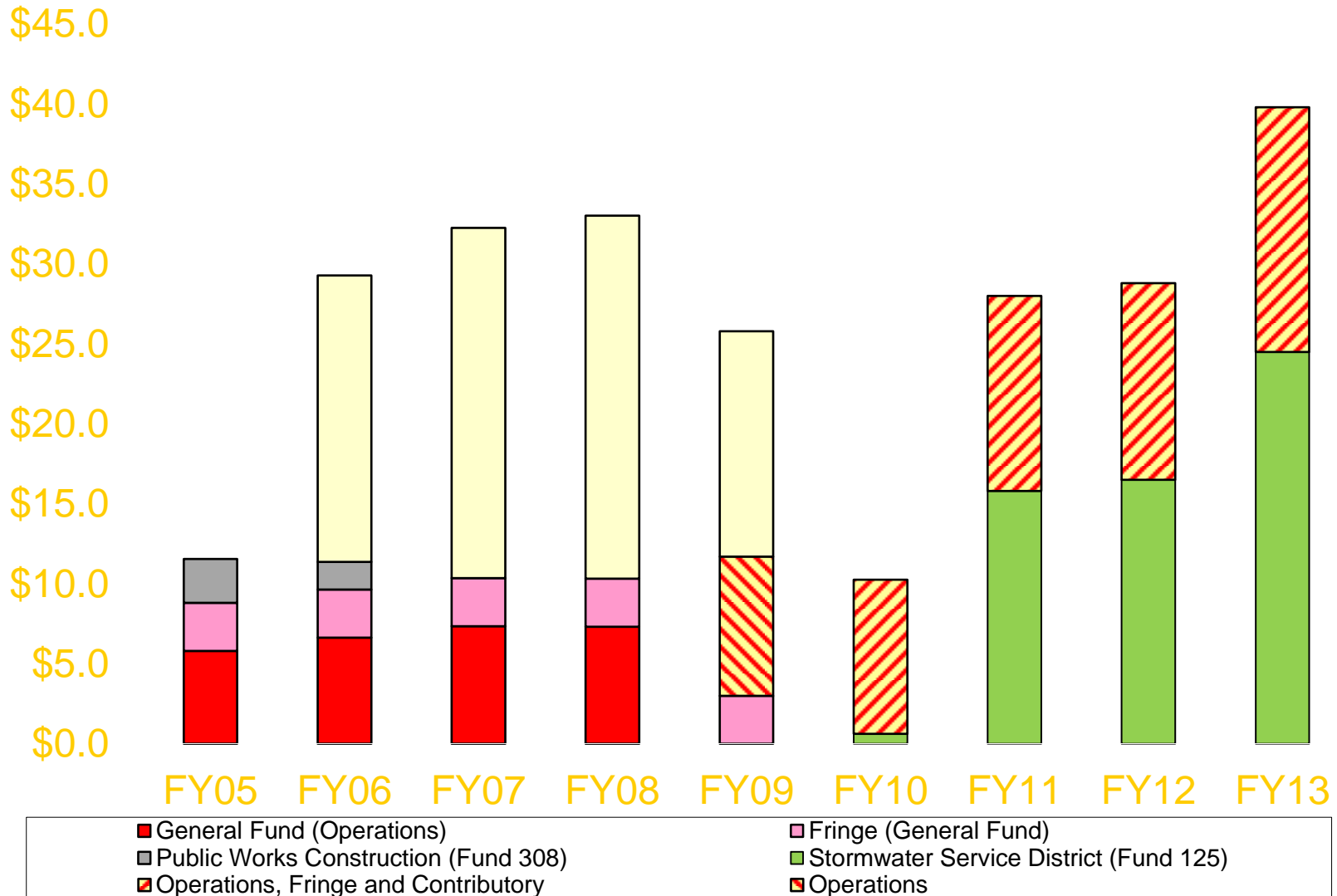
1. 300 Recommendations
2. Consolidated into Categories (Completed 2012)
3. Inter-Agency Review (Current)
4. Implementation Plan (Mid/Late 2013)

# Challenges

- Aging infrastructure
- Evolving Science & Technology
- Land Rights
- Legal Issues
- Changing Conditions
- Growing Inventory
- New MS4 regulatory requirements
- TMDL requirements
- Economic Constraints

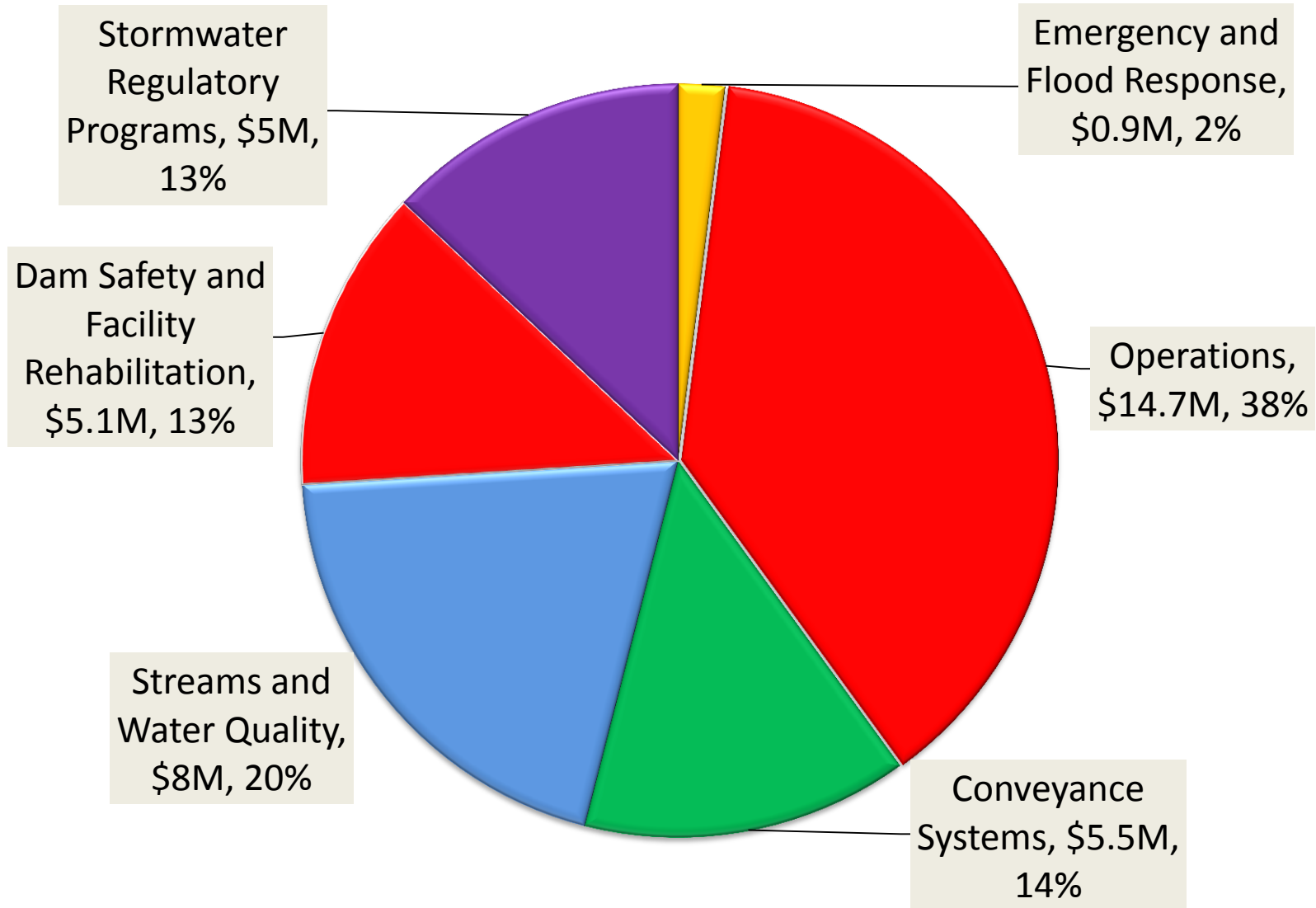


# History of Stormwater Funding





# Stormwater FY13 Budget



# WHAT CAN RESIDENTS DO



# Volunteer Opportunities

- Fairfax County – Stormwater Planning
- Earth Sangha
- Fairfax Releaf
- Northern VA Soil and Water Conservation District
- Fairfax County Park Authority
- Friends of Groups
- Potomac Conservancy
- Alice Ferguson Foundation
- Clean Fairfax Council
- Master Gardener/Naturalist
- Izaak Walton League

[www.fairfaxcounty.gov/dpwes/stormwater/volunteer.htm](http://www.fairfaxcounty.gov/dpwes/stormwater/volunteer.htm)

703-324-5500, TTY 711

SWPDmail@fairfaxcounty.gov

# COMPLETED PROJECTS



# Stream Restoration

Poplar Springs - Before & After



Drainage Area (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
230.4	7.5	141	1.25



# Stream Restoration

Poplar Springs - Now





# Outfall Retrofits

Sheffield Hunt– Before & After



Drainage Area (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
29.25	63.92	188	145.7



# Stream Restoration

Government Center - Before & After



Drainage Area (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
150	10.7	202	1.6



# Pond Retrofits

Sequoia Farms - Before & After



Area Treated (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
92.25	50.48	361.16	3.88



# Pond Retrofits

Cinnamon Oaks - Before & After



Area Treated (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
11	9	68	2.1



# Pond Retrofits

Cinnamon Oaks - Now



# Low Impact Development

Franklin Middle School - Parking Lot  
Bioretention Before & After



Drainage Area (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
1.4	2	12	0.5



# Low Impact Development

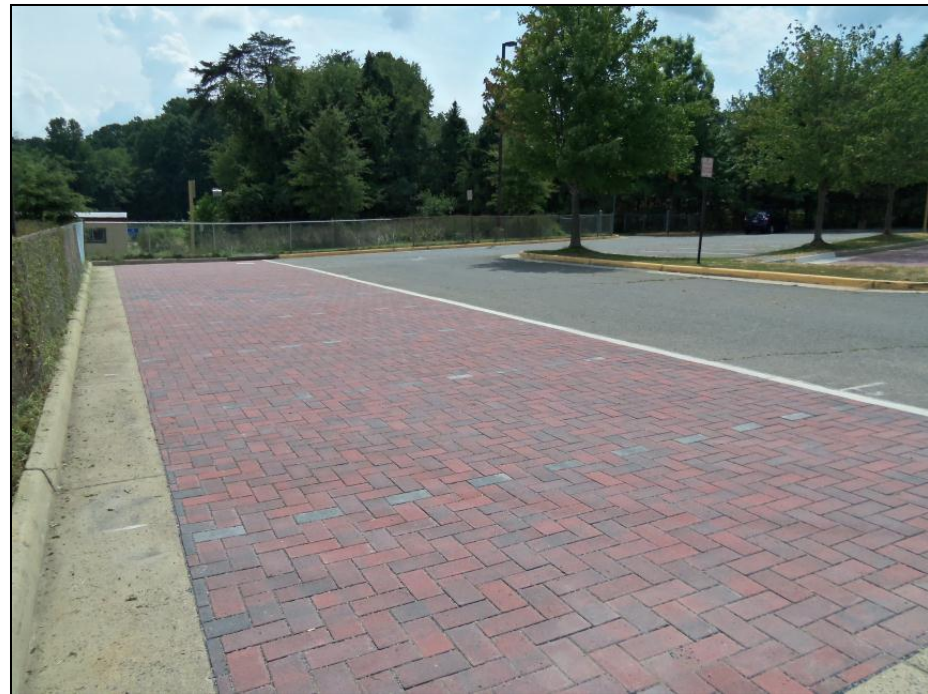
Franklin Middle School - Parking Lot Bioretention  
Now





# Low Impact Development

FCPS Partnership Project  
Waples Mill - Before & After



Area Treated (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
0.82	1.55	11.10	0.12

# Low Impact Development

FCPS Partnership Project

Shrevewood Elementary Porous Asphalt - Before & After



Area Treated (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
0.72	0.69	4.92	0.07



# Low Impact Development

FCPS Partnership Project  
Shrevewood Elementary Porous Asphalt - Now





# Low Impact Development

Sherwood Library - Permeable Pavers  
During & After



Area Treated (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
1.7	3	12	0.6



# Low Impact Development

Sherwood Library - Permeable Pavers - Now





# Low Impact Development

Sherwood Library – Tree Box Filters  
Crape Myrtles with One Year of Growth





# Low Impact Development

## Walt Whitman Middle School – Rain Gardens



Area Treated (acres)	Phosphorous Removal (lbs/yr)	Nitrogen Removal (lbs/yr)	Sediment Removal (tons/yr)
1.29	2.2	4.7	0.6



# Low Impact Development

Walt Whitman Middle School – Rain Gardens  
Now





# Low Impact Development

Fairfax County Park Authority Partnership Project  
Great Falls Nike Site Turf Field Conversion – Before & During



# Questions?

Stormwater Planning Division

703-324-5500, TTY 711

[www.fairfaxcounty.gov/dpwes/stormwater](http://www.fairfaxcounty.gov/dpwes/stormwater)

[www.fairfaxcounty.gov/dpwes/watersheds](http://www.fairfaxcounty.gov/dpwes/watersheds)

[SWPDMail@fairfaxcounty.gov](mailto:SWPDMail@fairfaxcounty.gov)

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